

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
21 October 2004 (21.10.2004)

PCT

(10) International Publication Number
WO 2004/089624 A3

(51) International Patent Classification⁷: **B32B 27/28**,
33/00, 23/08, C08L 101/00

(21) International Application Number:
PCT/IB2004/001035

(22) International Filing Date: 5 April 2004 (05.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003/2879 11 April 2003 (11.04.2003) ZA

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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
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TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,
GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(88) Date of publication of the international search report:
27 January 2005

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: **PACKAGING WITH WATER SOLUBLE BARRIER LAYER**

(57) Abstract: The invention provides a packaging material which comprises a polymeric base component and a barrier component which coats and lines a surface of the base component, the barrier component inhibiting migration of gases, vapours and liquids through the base component. The barrier component comprises a polymeric layer comprising at least two different polymeric species which are polar and which are water soluble. The different species have different chemical compositions and are complementary in that they are bound together physically by interpolymer complexation to form an interpenetrating physical network. The invention also provides a process for producing the packaging material which comprises coating at least one surface of the base component with the barrier component and causing the complementary species to interact together physically by interpolymer complexation to form an interpenetrating physical network.

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INTERNATIONAL SEARCH REPORT

International Application No

PC1 32004/001035

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B32B27/28 B32B33/00 B32B23/08 C08L101/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B32B C08L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 997 703 A (NAKASHIO SEIZO ET AL) 14 December 1976 (1976-12-14)	1-3, 11-13, 16-18, 20, 27-29, 32-34,36 14,30
A	claims 1-8; examples 1,2,4 -----	
X	EP 1 082 215 A (TETRA LAVAL HOLDINGS & FINANCE) 14 March 2001 (2001-03-14) claims 1-4,9,12,14-18,20,23,24,29,30; figures 4,5a-d ----- -/--	1,2,4,5, 11-13, 17,20, 21, 27-29,36

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search

8 September 2004

Date of mailing of the international search report

08 November 2004

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/B2004/001035

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 106 890 A (MARUHASHI MOTOKAZU ET AL) 21 April 1992 (1992-04-21) column 6, lines 1-3; claim 1; examples -----	1-3,8, 10-12, 14,17, 24-28, 30,36
A	US 4 553 973 A (EDGREN DAVID) 19 November 1985 (1985-11-19) column 6 - column 9, lines 63-65; claim 1; figure 2; examples 3-5 -----	1,3,5, 12,13, 17,21, 28,29,36
A	ALLAN S. HOFFMAN: "Hydrogels for biomedical applications" ADVANCED DRUG DELIVERY REVIEWS, vol. 43, 2002, pages 3-12, XP002294912 AMSTERDAM, NL page 4, lines 6-,40-45,70-90; tables 1,2 -----	1-3,5, 12,17, 21,28,36

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2004/001035

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-36

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-36

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
1.polylactide

2. claims: 1-36

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
2.polyanhydrides

3. claims: 1-36

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
3.polyamides

4. claims: 1-36

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
4.proteins

5. claims: 1-36

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
5.gums

6. claims: 1-36

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
starches:
6.pectin

7. claims: 1-36

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
7.hydroxyethylstarches

8. claims: 1-36

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
8.carboxymethyl starch

9. claims: 1-36

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
cellulose acetates:
9.cellulose acetate butyrates

10. claims: 1-36

I:Claims 1-36 directed to barrier composition components comprising the polymer listed in claims (12, 28):
10.cellulose acetate proprionates

11. claims: 1-36

II:Claims 1-36 insofar as directed to base layer polymers not disclosed in D3 and selected from claims (11, 27):
11. PETG

12. claims: 1-36

II:Claims 1-36 insofar as directed to base layer polymers not disclosed in D3 and selected from claims (11, 27):
12. PS

13. claims: 1-36

II:Claims 1-36 insofar as directed to base layer polymers not disclosed in D3 and selected from claims (11, 27):
13. PEN

14. claims: 1-36

II:Claims 1-36 insofar as directed to base layer polymers not disclosed in D3 and selected from claims (11, 27):
13. PEN

15. claims: 1-36

II:Claims 1-36 insofar as directed to base layer polymers not disclosed in D3 and selected from claims (11, 27):
15. PB

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

16. claims: 1-36

III: Claims 4 and 20 directed to packages with an inner barrier coating (16)

17. claims: 1-36

IV: Claims 5 and 21 directed to packages with an outer barrier coating.

18. claims: 1-36

V: Claims 6, 22 directed to packages where the barrier adheres to the base physically by electrostatic bonding

19. claims: 1-36

VI: Claims 7, 23 directed to packages where the barrier adheres to the base chemically by covalent bonding (19)

20. claims: 1-36

VII: Claims 8-10 and 24-26 directed to barrier coatings with a protective coating

21. claims: 1-36

VIII: Claims 34-35 directed to base layers which are chemically surface activated

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB2004/001035

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